the optic nerve. Among the large cells small ones are observed. As M. Weissmann has shown, each of the large cells will become one of the simple eyes, the totality of which constitutes the retina. The small cells become the choroid cells.

My predecessors, who had not observed the destruction of the integuments of the later segments of the larva, thought that the integuments of the abdomen of the adult were formed by a simple transformation of the hypodermic cells of the latter. Having already shown that the whole of the skin of the larva disappears, I had to ascertain how the integuments of the abdomen of the adult are developed. I have ascertained that they are formed at the expense of the embryonic cells which fill the body of the pupa, and the origin of which has been indicated above. These embryonic cells become converted into hypodermic cells. This change does not take place at all points of the abdomen at the same time; but, in each segment, the hypodermis of the adult appears at first at four points, two below and two above.

As the organs of the larva disappear, and the organs of the adult are formed, the nervous centres undergo very important internal modifications. Their investigation, which has not even been touched upon, is environed with technical difficulties. I have succeeded in overcoming nearly all of these. I have traced step by step the internal modifications that the nervous centres undergo during pupal life; and I shall shortly have the honour to make known to the Academy the principal results of my researches upon this subject.—*Comptes Rendus*, Nov. 14, 1881, p. 800.

Development of the Ovum of Melicerta. By M. L. Joliet.

The development of the embryo of the Rotatoria has hitherto been studied only in two genera, namely in *Brachionus* by Salensky, and in *Pedalion* by Barrois. The mode of segmentation is still unknown.

Although we have ascertained that the development of the winter egg and of the male egg agrees generally with that of the female summer egg, it is more particularly upon this last that our investigations have been made.

Within the sac of maturation it presents, in the midst of the germinal vesicle, a small but very distinct germinal spot. After deposition this spot soon disappears. It did not appear to me that there was any emission of a polar globule. The first segmentation-plane, perpendicular to the larger axis of the egg, which is an irregular ovoid, divides it into two very unequal segments. Afterwards these two segments divide symmetrically, and so that each of them furnishes eight of the spheres which constitute the egg in the stage XVI. We observe only that the spheres derived from the larger primary segment are larger than the others, and larger in proportion to their distance from the animal pole. It seems as if each of them had a certain degree of animality. During the whole

period of the segmentation the behaviour of the nuclei and asters is very remarkable. We also observe a movement of rotation (already recognized by Barrois in *Pedalion*), which tends to transport the spheres derived from the small segment from the animal pole to the opposite pole, skirting the dorsal surface, while the large spheres give place to them and glide along the ventral surface.

At the stage XVI. the egg consists of a row of four small cells derived from the small segment and occupying the dorsal surface, of a row of four spheres gradually increasing in size occupying the ventral surface, and of two rows of four cells placed on the sides, four of them derived from the large and four from the small segment.

It is only after this stage XVI. that the dorsal and lateral cells begin to multiply much more rapidly than the ventral ones and to spread over their sides. In proportion as these small cells glide over the surface of the large ones the latter sink by an oscillatory movement, which at first removes the smaller ones, until finally the last and largest of them slips in its turn beneath the former ones, leaving an orifice (the blastopore), which remains visible for some time, almost exactly at the spot where the mouth will afterwards be formed.

Even by the situation it occupies from the moment of the closure of the blastopore, it is easy to see that the last sphere enveloped corresponds to the intestine, which it will serve to form, if not entirely, at least in great part.

In the same way, by the manner of their inclusion, the two following large spheres will be upon the ventral surface of the former, in the situation that will be occupied by the genital glands. Subsequently, when the spheres come to divide and subdivide, this arrangement will become very obscure ; but for a certain time after the closure of the blastopore it remains perceptible, and shows that the embryo is formed, if not of continuous lamellæ, at least of masses of tissue which obviously correspond to the endoderm, mesoderm, and ectoderm of the higher animals, both by their position and their destiny.

When the subdivision has been carried to its last limit, the egg appears as a finely moruloid mass, in which we can recognize only an outer light layer and a dark central one. The cephalic region always remains lighter. We can no longer distinguish the blastopore.

Soon afterwards an oblique furrow, which constricts the mass and separates the tail, appears on the side and along the ventral surface ; the tail is thus folded under the ventral surface and directed towards the head, as in the embryo of *Brachionus* and *Pedalion*.

About the level of the extremity of the tail a depression appears in the cephalic mass. I do not know whether this corresponds to the depression described by Salensky in *Brachionus* ; but it indicates the appearance, not of the mouth, but of the vibratile pit situated below the lip in the adult. A little later, and a little higher up, the mouth makes its appearance as a depression which no doubt sinks

far enough to form the mouth, but certainly not sufficiently to form the mentum. Still later, and also upon the back, the cloaca will be formed by an invagination of the ectoderm; and this, although very long in the adult, is still very short in the larva, and remains reduced to a simple emargination in the *Floscularieæ*. The cephalic region is soon bounded by a slight fold, which indicates the margin of the chitinous covering. The eyes make their appearance as two red points; cilia begin to move, at first upon the infrabuccal pit, then upon the mouth, and finally upon the top of the head, where they form a sort of circlet. The armature of the mastax is formed, the tail withdraws by degrees towards the extremity of the egg, the envelope of which it finally ruptures. It has already been described by several authors; and I shall dwell only upon this fact, that, like the larva of *Lacinularia* figured by Huxley, it presents cilia upon three points of the body—a continuous and scarcely sinuous circlet placed above the mouth, a second circle surrounding this circlet and the mouth, and extending even over the vibratile pit, and, lastly, a tuft of cilia at the extremity of the tail. The larva remains active for several hours, and then attaches itself by means of the glands contained in its tail. It is then that it begins to collect in the vibratile pit the minute particles suspended in the water. These it mixes with the secretion from a gland, hitherto taken for a ganglion, and, according to the judicious observations of Gosse and Williamson, forms of them those little balls which, when juxtaposed, constitute the tube that it inhabits.—*Comptes Rendus*, November 21, 1881, p. 856.

On a Yellow Variety of the Common Eel (Anguilla vulgaris, *Fl.*). By Dr. Heinrich Bolau, of Hamburg.

On the 2nd July, 1879, a very interesting, pure sulphur-yellow variety of our river-eel, which had been taken in the Elbe near Hamburg, was brought to me for the aquarium of our Zoological Garden here. This first example was followed by thirteen other similar ones in the interval between the 4th September and the 9th October of the same year. In the summer of the present year (1880) the occurrence of the yellow eels in the Elbe was repeated. On the 5th May I received two specimens, and then gradually, up to the 13th August, seven others.

Only the eel first captured, which is still living in the aquarium, is pure yellow without black spots. It is about 32 centim. (13 inches) long. Its upper surface and sides are of a beautiful light lemon-yellow; the muzzle is rather more orange-coloured. In the hinder half of the body, and especially the tail, there are on the sides numerous whitish spots in the yellow. The whole underside is whitish and shining, while the yellow parts of the body are dull. The fins are pale yellow and so translucent that the finer blood-vessels may be detected in them with the naked eye; in the same way the blood shows reddish through the skin on the whitish lower